ACCESSORIES

APPENDIX A

In This Appendix...

Accessories Part Numbering

With the exception of EMI Filters, RF Filters, and some Line Reactors, GS2 Series accessory part numbers incorporate the part numbers of the AC Drives for which they are compatible. Each accessory part number begins with the AC Drive series and rating. This is followed by an accessory code, and, when applicable, a description code. The accessory part numbering scheme is shown below.

GS - 23P0 - LR - 3PH

- **Description Code** (optional)
  1PH: Single phase **3PH**: Three phase **ENC**: Enclosure
  Blank: For reactor, check specific part # to determine phase
- **Accessory Code**
  BR: Braking resistor **FKIT**: Fuse Kit
  FUSE: Replacement fuses for FKIT **LR**: Line reactor
- **Drive Rating** (See Drive P/N description)
  BZL: Bezel **CBL**: Cable **DBU**: Dynamic Brake Unit
  EDRV: Ethernet board **FB**: Feedback board
  KPD: Keypad **RS**: Recommended Standard
- **Drive Series**
  GS: All GS and DURApulse Series Drives
  GS1: GS1 Series **GS2**: GS2 Series
  GS3: DURApulse Series

Line Reactors

Input line reactors protect the AC drive from transient overvoltage conditions typically caused by utility capacitor switching. Input line reactors also reduce the harmonics associated with AC drives, and are recommended for all installations.

Output line (load) reactors protect the motor insulation against AC drive short circuits and IGBT reflective wave damage, and also allow the motor to run cooler by "smoothing" the motor current waveform. They are recommended for operating "non-inverter-duty" motors, and for any motors when the length of wiring between the AC drive and motor exceeds 75 feet.

115V Single Phase Input Line Reactors*

Part Number	Rated Amps	Impedance	Inductance	Watt Loss	GS2 Drive Model and Side / Phase / Volts	Drive hp
GS-10P2-LR	18	3%	0.80 mH	19	GS2-10P2 (input) / 1ph / 115V	0.25
GS-10P5-LR	25	3%	0.50 mH	23	GS2-10P5 (input) / 1ph / 115V	0.5
GS-11P0-LR	35	3%	0.40 mH	36	GS2-11P0 (input) / 1ph / 115V	1

NOTE: Single phase line reactors should NOT be installed on the output side of the AC drive.

Line Reactors (continued)

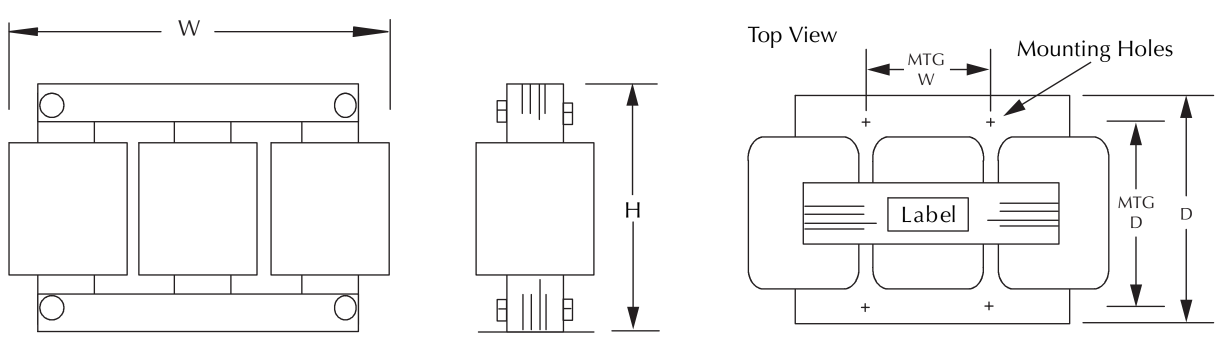
230V Single Phase Input Line Reactors*						
Part Number	**Rated Amps**	**Impedance**	**Inductance**	**Watt Loss**	**GS2 Drive Model and Side / Phase / Volts**	**Drive hp**
GS-20P5-LR-1PH	8	3%	6.50 mH	13	GS2-20P5 (input) / 1ph / 230V	0.5
GS-21P0-LR-1PH	12	3%	6.50 mH	13	GS2-21P0 (input) / 1ph / 230V	1
GS-22P0-LR-1PH	18	3%	3.00 mH	25	GS2-22P0 (input) / 1ph / 230V	2
GS-23P0-LR-1PH	35	3%	2.50 mH	26	GS2-23P0 (input) / 1ph / 230V	3
NOTE: Single phase line reactors should NOT be installed on the output side of the AC drive.						

230V Three Phase Input / Output Line Reactors						
Part Number	**Rated Amps**	**Impedance**	**Inductance**	**Watt Loss**	**GS2 Drive Model and Side / Phase / Volts**	**Drive hp**
GS-20P5-LR-3PH	4	3%	6.50 mH	13	GS2-20P5 (in/out) / 3ph / 230V	0.5
GS-21P0-LR-3PH	4	3%	3.00 mH	7	GS2-21P0 (in/out) / 3ph / 230V	1
GS-22P0-LR-3PH	8	3%	1.50 mH	11	GS2-22P0 (in/out) / 3ph / 230V	2
GS-23P0-LR-3PH	12	3%	1.30 mH	23	GS2-23P0 (in/out) / 3ph / 230V	3
GS-25P0-LR	18	3%	0.80 mH	19	GS2-25P0 (in/out) / 3ph / 230V	5
GS-27P5-LR	25	3%	0.50 mH	23	GS2-27P5 (in/out) / 3ph / 230V	7.5

460V & 575V Three Phase Input / Output Line Reactors						
Part Number	**Rated Amps**	**Impedance**	**Inductance**	**Watt Loss**	**GS2 Drive Model and Side / Phase / Volts**	**Drive hp**
GS-41P0-LR	2	3%	12.0 mH	7	GS2-41P0 (in/out) / 3ph / 460V	1
GS-42P0-LR	4	3%	6.50 mH	13	GS2-42P0 (in/out) / 3ph / 460V GS2-53P0 (in/out) / 3ph / 575V	2 3
GS-43P0-LR	8	3%	5.00 mH	31	GS2-43P0 (in/out) / 3ph / 460V GS2-55P0 (in/out) / 3ph / 575V	3 5
GS-45P0-LR	8	3%	3.00 mH	25	GS2-45P0 (in/out) / 3ph / 460V	5
GS-47P5-LR	12	3%	2.50 mH	26	GS2-47P5 (in/out) / 3ph / 460V GS2-57P5 (in/out) / 3ph / 575V GS2-5010 (in/out) / 3ph / 575V	7.5 7.5 10
GS-4010-LR	18	3%	1.50 mH	29	GS2-4010 (in/out) / 3ph / 460V	10
GS-51P0-LR	2	3%	20.0 mH	9	GS2-51P0 (in/out) / 3ph / 575V	1
GS-52P0-LR	4	3%	9.10 mH	15	GS2-52P0 (in/out) / 3ph / 575V	2

Line Reactor Dimensions

AC Line Reactor Dimensions (inches)							
Part Number	H	W	D	Mtg. D	Mtg. W	Mtg Slot Hole Size	Weight (lbs)
GS-10P2-LR	4.80	6.00	3.30	2.09	2.00	0.28 x 0.63	7
GS-10P5-LR	5.70	6.00	3.09	2.09	3.00	0.28 x 0.63	7
GS-11P0-LR	5.70	6.00	3.34	2.34	3.00	0.28 x 0.63	9
GS-20P5-LR-1PH	3.40	4.40	2.83	1.77	1.44	0.28 x 0.63	2.80
GS-20P5-LR-3PH	3.40	4.40	2.83	1.77	1.44	0.28 x 0.63	2.80
GS-21P0-LR-1PH	3.40	4.40	2.83	1.77	1.44	0.28 x 0.63	2.80
GS-21P0-LR-3PH	3.40	4.40	2.83	1.77	1.44	0.28 x 0.63	2.30
GS-22P0-LR-1PH	3.40	4.40	2.83	1.77	2.00	0.28 x 0.63	3.10
GS-22P0-LR-3PH	3.40	4.40	2.83	1.77	2.00	0.28 x 0.63	2.80
GS-23P0-LR-1PH	4.80	6.00	3.30	2.09	2.00	0.28 x 0.63	7.50
GS-23P0-LR-3PH	3.40	4.40	2.83	1.77	2.00	0.28 x 0.63	2.90
GS-25P0-LR	4.80	6.00	3.30	2.09	2.00	0.28 x 0.63	7.10
GS-27P5-LR	5.70	6.00	3.09	2.09	3.00	0.28 x 0.63	7.00
GS-41P0-LR	3.40	4.40	2.83	1.77	1.44	0.28 x 0.63	2.30
GS-42P0-LR	3.40	4.40	2.83	1.77	1.44	0.28 x 0.63	2.80
GS-43P0-LR	3.40	4.40	3.39	2.39	2.00	0.28 x 0.63	4.30
GS-45P0-LR	3.40	4.40	2.83	1.77	2.00	0.28 x 0.63	3.10
GS-47P5-LR	4.80	6.00	3.30	2.09	2.00	0.28 x 0.63	7.50
GS-4010-LR	4.80	6.30	3.55	2.34	2.00	0.28 x 0.63	9.10
GS-51P0-LR	3.40	4.40	2.83	1.77	1.44	0.28 x 0.63	3
GS-52P0-LR	3.40	4.40	3.33	2.37	1.44	0.28 x 0.63	3

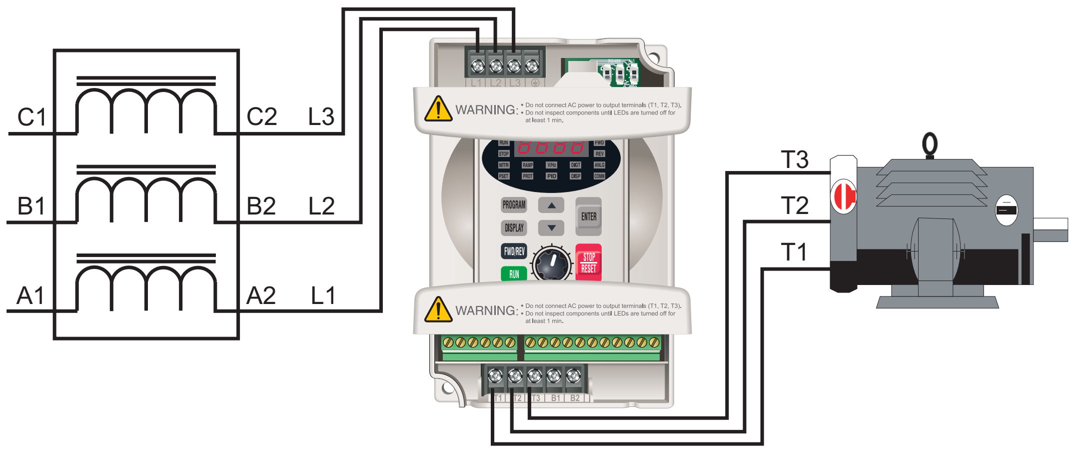


AC Line Reactor Dimensions

Line Reactor Applications and Connections

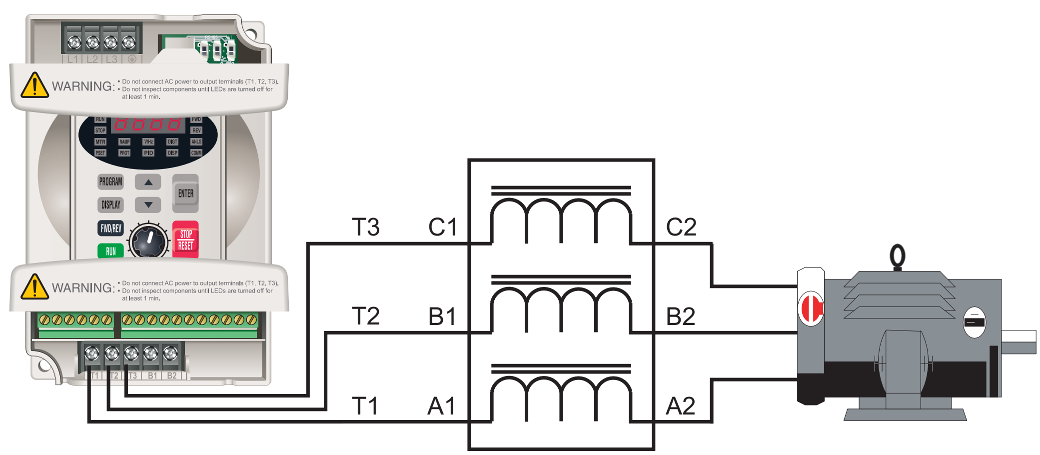
Input Side of AC Drive

When installed on the input side of the AC Drive, line reactors will reduce line notching, and limit current and voltage spikes and surges from the incoming line. The line reactors will also reduce harmonic distortion from the AC Drive onto the line. Units are installed in front of the AC Drive as shown.



Output Side of AC Drive

When installed on the output side of the AC Drive, line reactors protect the drive from short circuits at the load. Voltage and current waveforms from the drive are enhanced, reducing motor overheating and noise emissions.

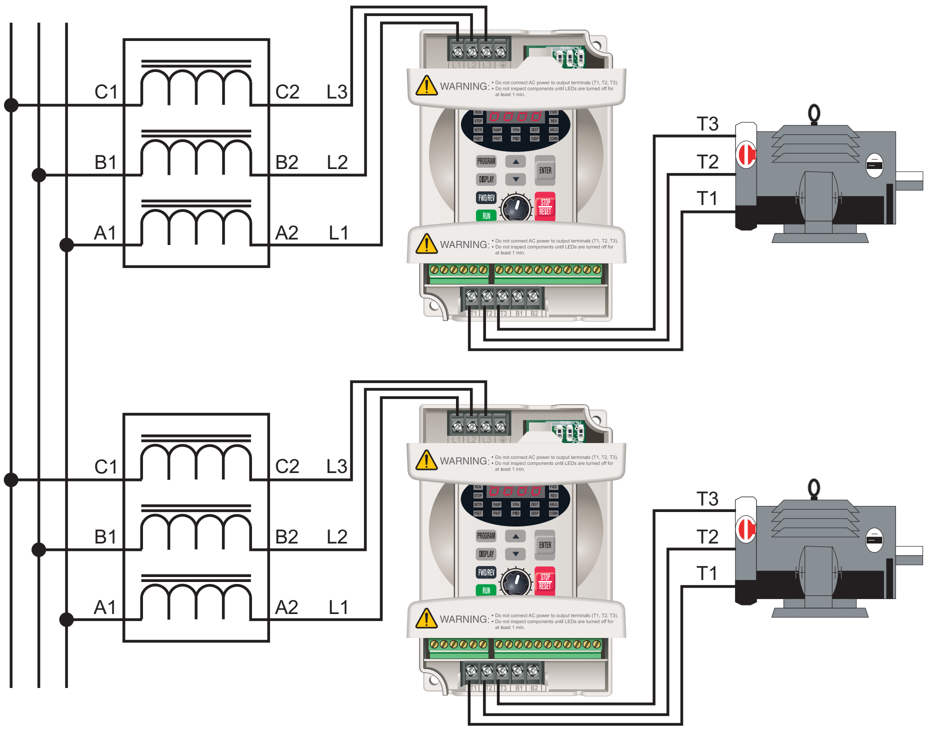


Single-phase line reactors should NOT be installed on the output of the AC Drive. Use only three-phase reactors on drive outputs.

Line Reactor Applications and Connections (continued)

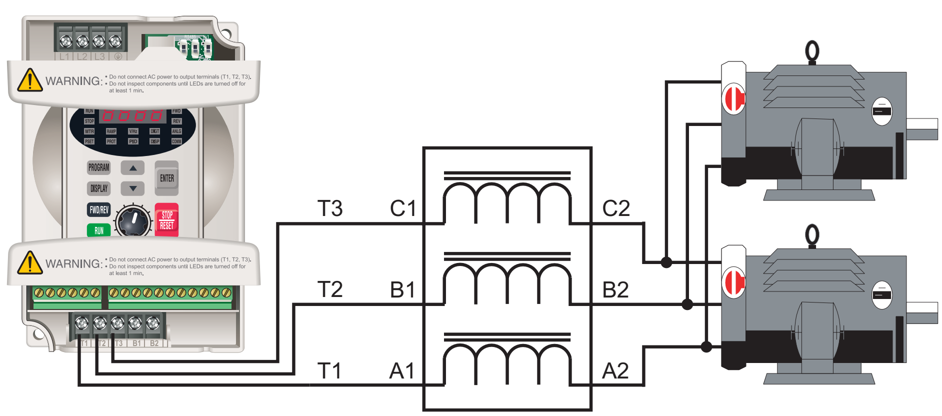
Multiple AC Drives

Individual line reactors are recommended when installing multiple AC Drives on the same power line. Individual line reactors eliminate cross-talk between multiple drives, and provide isolated protection for each drive for its own specific load.



Multiple Motors

A single reactor can be used when the application calls for multiple motors on the same AC Drive, if the motors operate simultaneously. The reactor is sized based on the total horsepower of all the motors. **Overload relays** (not shown) are recommended for use in multi-motor applications.

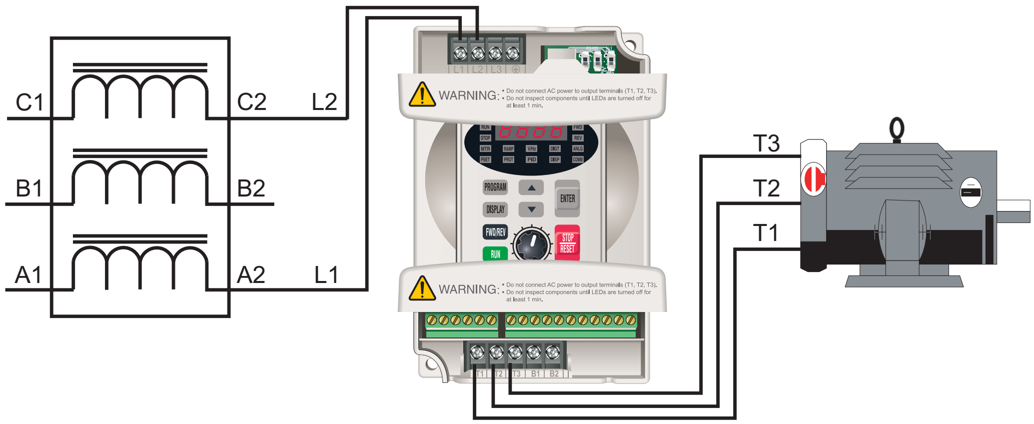


A single reactor should be used with multiple motors ONLY when the motors will operate simultaneously. OVERLOAD RELAYS are recommended for use in multiple motor applications.

Line Reactor Applications and Connections (continued)

Single-Phase Applications

Some of the line reactors are listed for use with single-phase input power. Follow the connection diagram shown below. Make sure that terminals B1 and B2 are properly insulated before any connections are made.



WARNING: Please ensure that you properly insulate terminals B1 and B2 before making any connections to single-phase power.

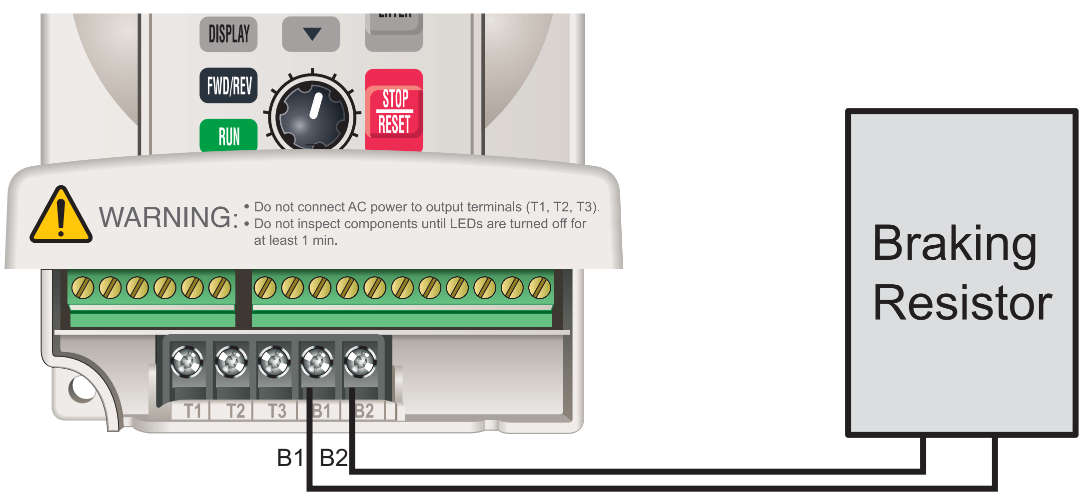
Braking Resistors

Braking resistors are used to increase the control torque of the AC Drive, for frequently repeated ON-OFF cycles of the AC Drive, or for decelerating a load with large inertia.

The use of braking resistors with GS2 Series AC drives requires no parameter setup. The AC drive automatically senses the presence of braking resistors.

Braking Resistor Specifications						
Part Number	Quantity & Wiring	Drive Model	Braking Torque	Ohms	Watts	Duty Cycle
GS-20P5-BR	1	GS2-10P2, GS2-10P5, GS2-20P5	270%	200Ω	80	10%
GS-21P0-BR	1	GS2-11P0, GS2-21P0	125%	200Ω	80	10%
GS-22P0-BR	1	GS2-22P0	125%	100Ω	300	10%
GS-23P0-BR	1	GS2-23P0	125%	70Ω	300	10%
GS-25P0-BR	1	GS2-25P0	125%	40Ω	400	10%
GS-27P5-BR	1	GS2-27P5	125%	30Ω	500	10%
GS-41P0-BR	1	GS2-41P0	125%	750Ω	80	10%
GS-42P0-BR	1	GS2-42P0, GS2-51P0, GS2-52P0	125%	400Ω	300	10%
	2 in parallel	GS2-53P0, GS2-55P0, GS2-57P5				
GS-43P0-BR	1	GS2-43P0	125%	250Ω	300	10%
GS-45P0-BR	1	GS2-45P0	125%	150Ω	400	10%
GS-47P5-BR	1	GS2-47P5	125%	100Ω	500	10%
GS-4010-BR	1	GS2-4010	125%	75Ω	1000	10%
	2 in series	GS2-5010				

Braking Resistor Connections



Braking Resistor Dimensions

Braking Resistor Dimensions (mm)							
Part Number	Figure	L1	L2	H	D	W	Maximum weight (g)
GS-20P5-BR	1	140	125	20	5.3	60	160
GS-21P0-BR	1	140	125	20	5.3	60	160
GS-22P0-BR	1	215	200	30	5.3	60	750
GS-23P0-BR	1	215	200	30	5.3	60	750
GS-25P0-BR	1	265	250	30	5.3	60	930
GS-27P5-BR	2	335	320	30	5.3	60	1100
GS-41P0-BR	1	140	125	20	5.3	60	160
GS-42P0-BR	1	215	200	30	5.3	60	750
GS-43P0-BR	1	215	200	30	5.3	60	750
GS-45P0-BR	1	265	250	30	5.3	60	930
GS-47P5-BR	2	335	320	30	5.3	60	1100
GS-4010-BR	2	400	385	50	5.3	100	2800

Figure 1

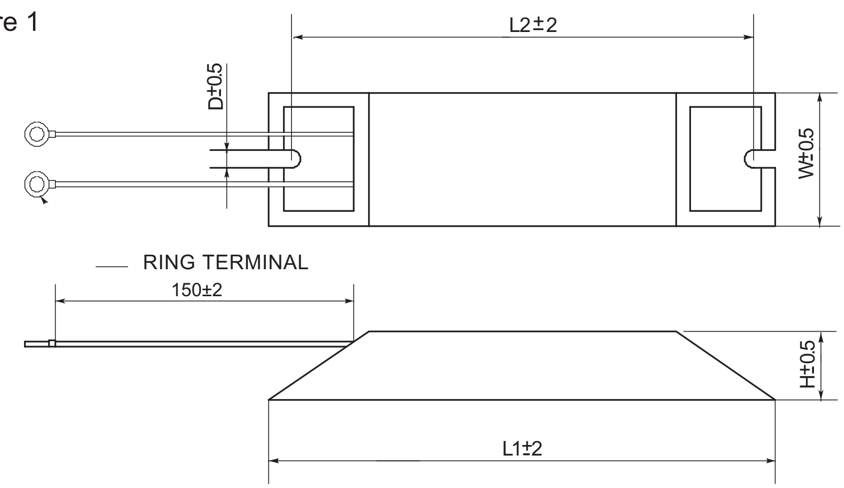
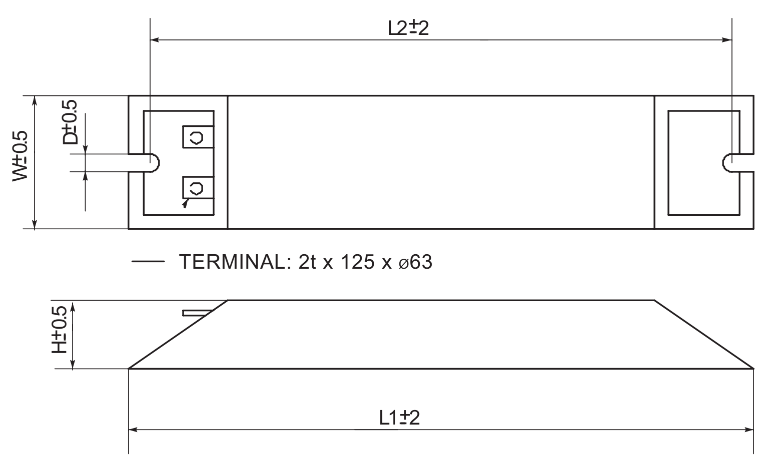


Figure 2



EMI Input Filters

The EC Declaration of Conformity for the GS2 Series AC Drives was completed in conjunction with EMI Filters listed below.

CE compliance requires the use of EMI filters; not available for 575V drives.

EMI Input Filter Specifications			
EMI Filter	**AC Drive Model / Input Phase**	**Filter Input Rating**	**Filter Dimensions**
20DRT1W3S	GS2-10P2 / 1ph GS2-10P5 / 1ph GS2-11P0 / 1ph GS2-20P5 / 1ph GS2-21P0 / 1ph GS2-22P0 / 1ph	250V, 1-phase, 20A	Figure 1
32DRT1W3C	GS2-23P0 / 1ph	250V, 1-phase, 32A	Figure 2
not available	GS2-20P5 / 3ph	n/a	
10TDT1W4C *	GS2-21P0 / 3ph GS2-22P0 / 3ph	250V, 3-phase, 10A	Figure 3
26TDT1W4C *	GS2-23P0 / 3ph	250V, 3-phase, 26A	Figure 4
40TDS4W4B	GS2-25P0 / 3ph GS2-27P5 / 3ph	250V, 3-phase, 40A	Figure 5
11TDT1W4S	GS2-41P0 / 3ph GS2-42P0 / 3ph GS2-43P0 / 3ph	480V, 3-phase, 11A	Figure 6
17TDT1W44	GS2-45P0 / 3ph GS2-47P5 / 3ph	480V, 3-phase, 17A	Figure 7
26TDT1W4B4	GS2-4010 / 3ph	480V, 3-phase, 26A	Figure 8
not available	GS2-5xxx	n/a	

**** EMI filters 10TDT1W4C and 26TDT1W4C do not mount underneath GS2 drives.***

EMI Filter Dimensions

These filters, except 10TDT1W4C and 26TDT1W4C, mount between the drive and the sub-panel. The filters have threaded holes on their front surface for this purpose, and the drives mount directly to the front of the filters.

Figure 1 [units = mm]

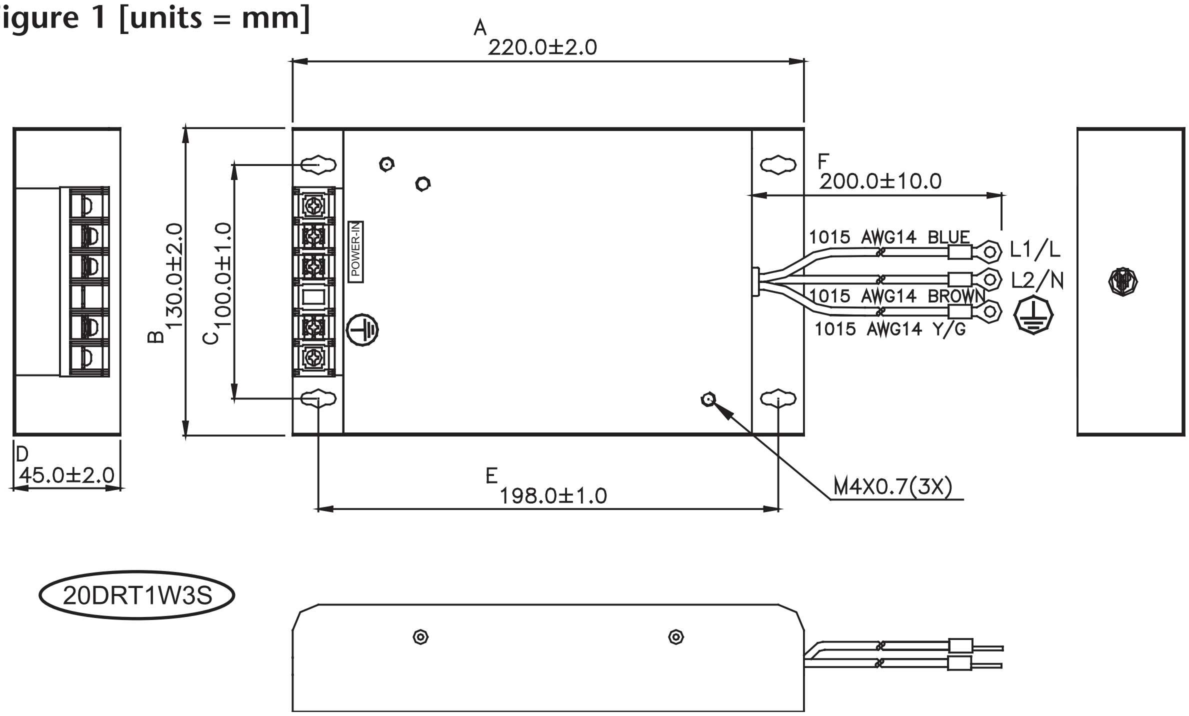
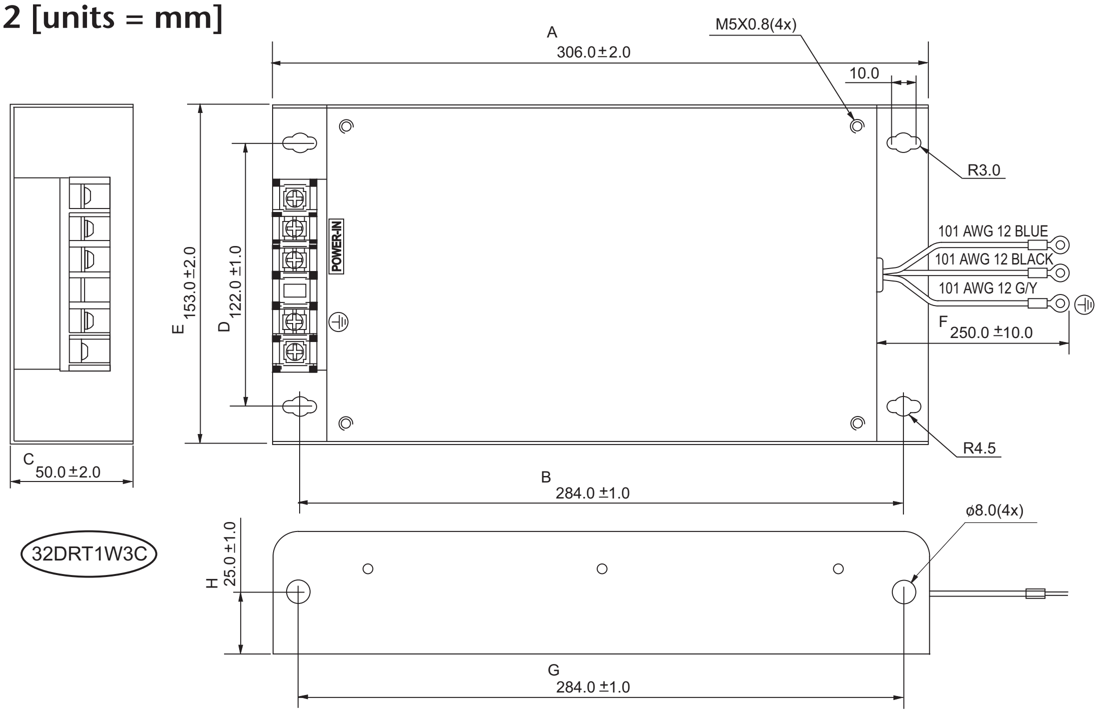


Figure 2 [units = mm]



EMI Filter Dimensions (continued)

Figure 3 [units = mm (in)]

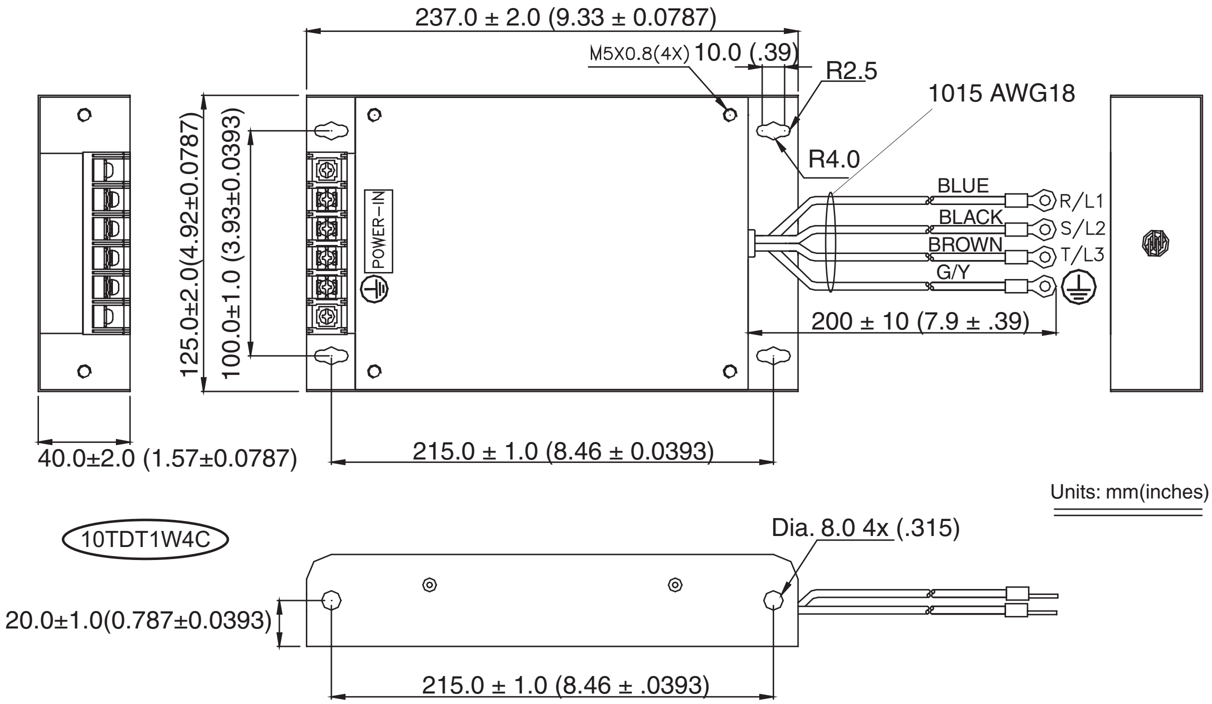
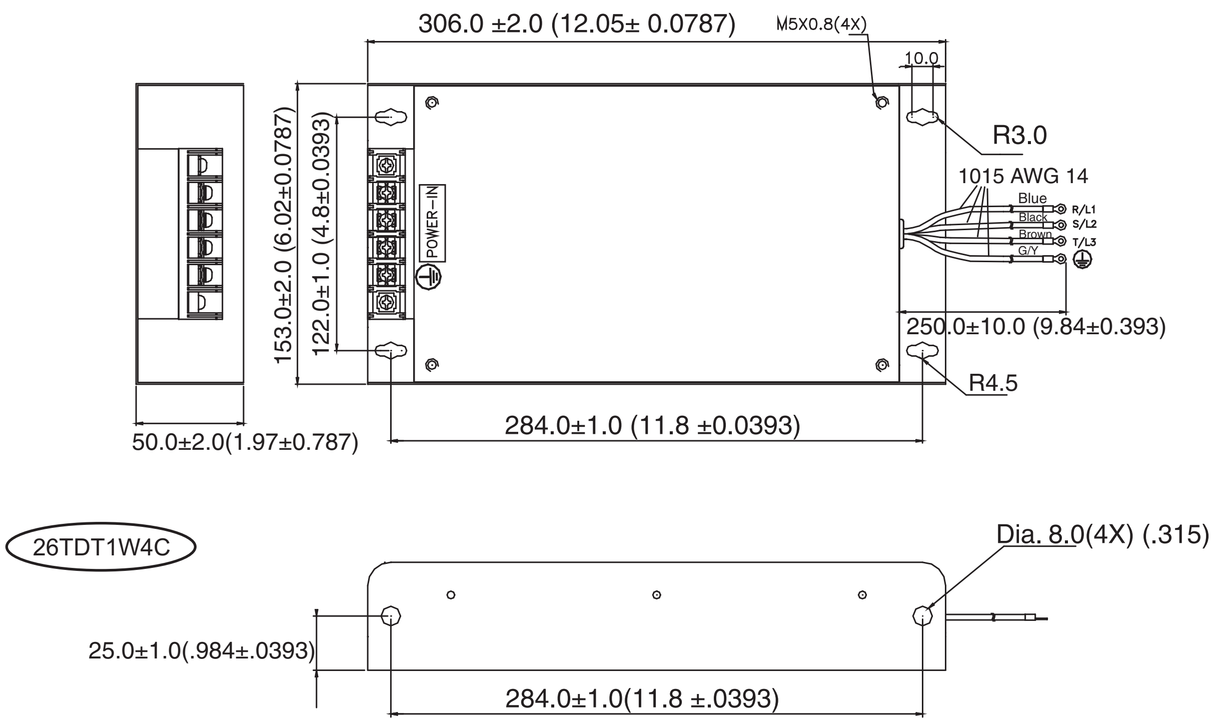


Figure 4 [units = mm (in)]



EMI Filter Dimensions (continued)

Figure 5 [units = mm]

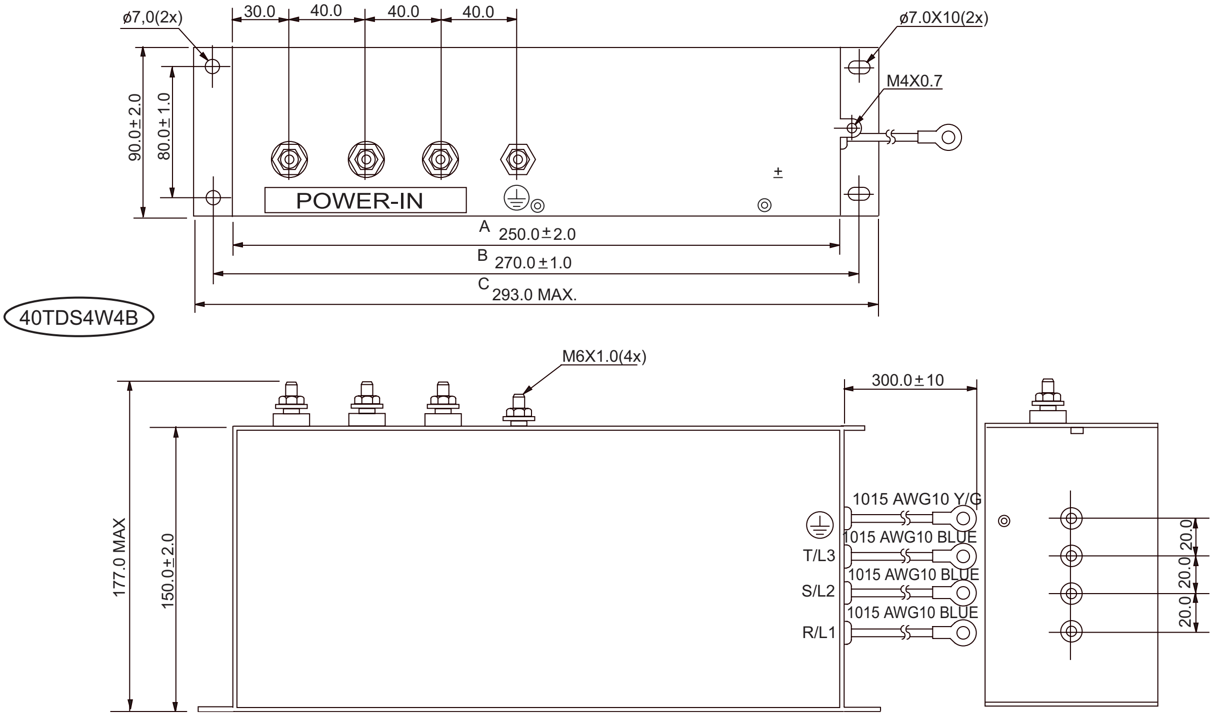
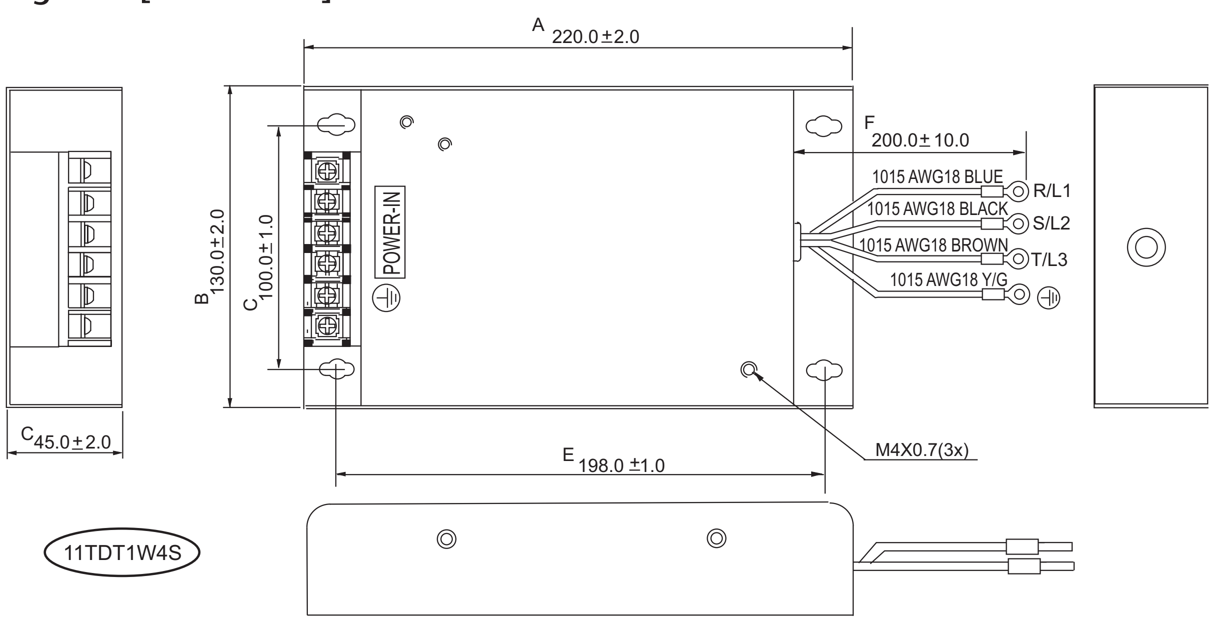


Figure 6 [units = mm]



EMI Filter Dimensions (continued)

Figure 7 [units = mm]

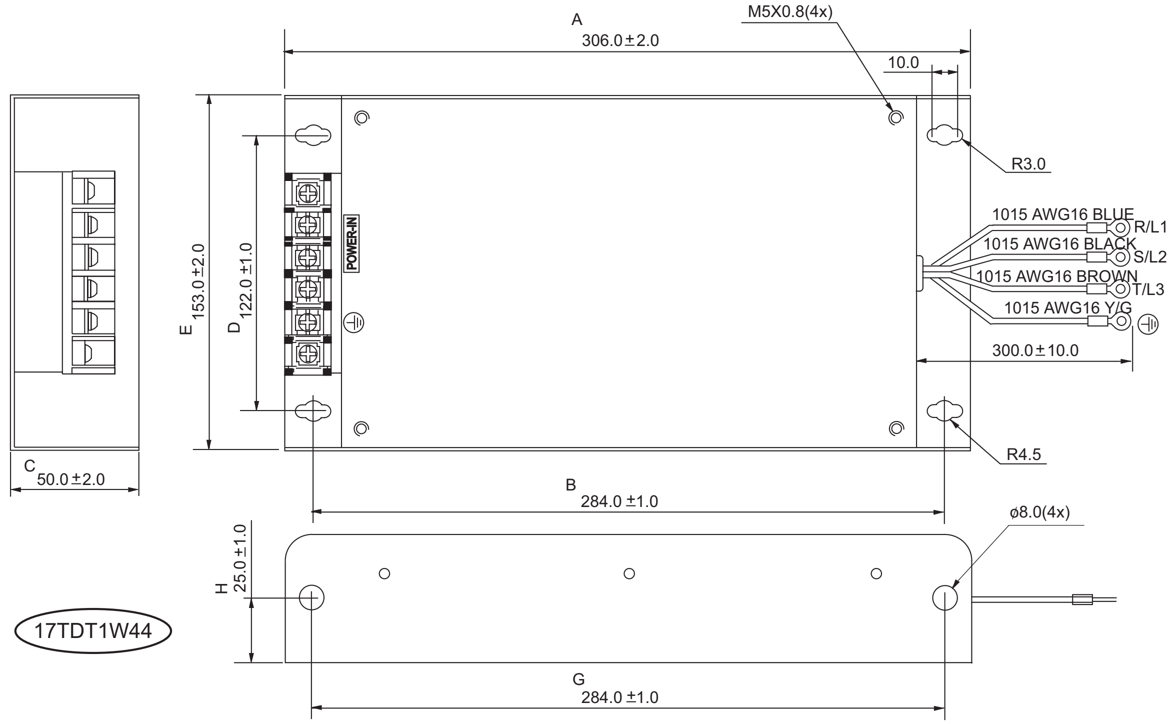
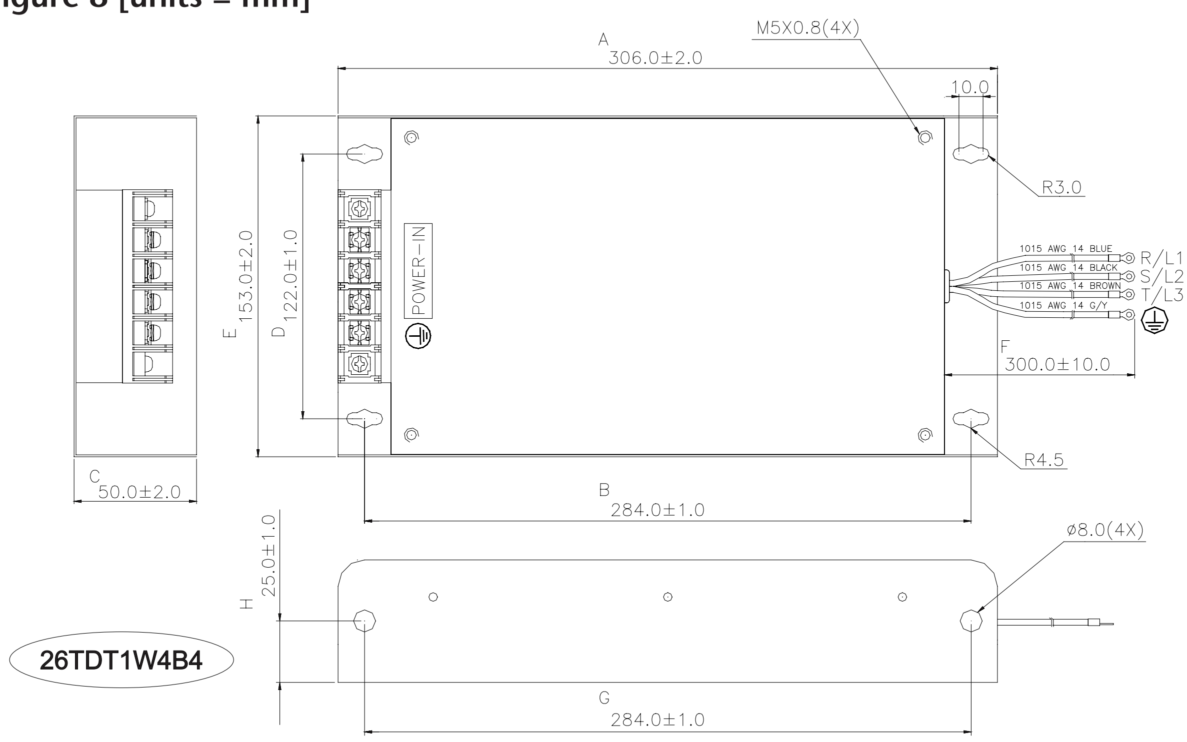
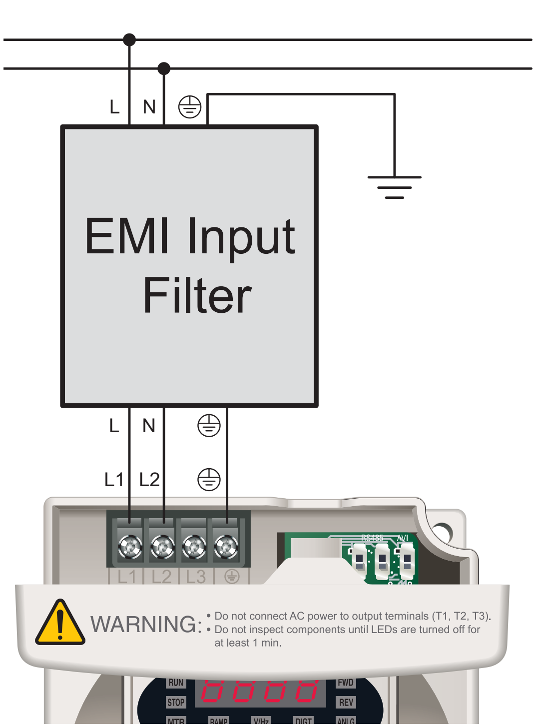


Figure 8 [units = mm]

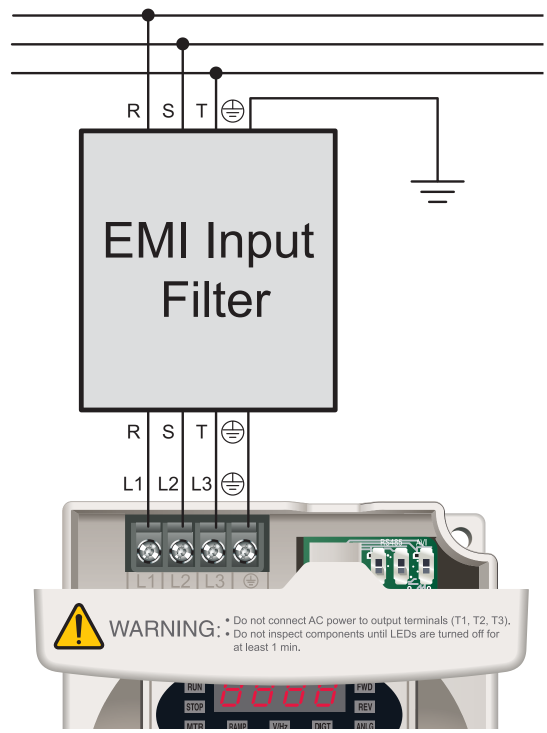


EMI Filter Connections

1-phase Input Power



3-phase Input Power



RF Filters

Description

Zero phase reactors, (aka RF noise filters) help reduce radiated noise from the AC drive power wiring. These RF filters are effective for noise reduction on both the input and output sides of AC drives. Attenuation quality is good in a wide range from AM band to 10 MHz.

Wiring Method

Wind each wire four times around the core, as shown in Figure 1. The reactor should me mounted as closely as possible to the drive.

If you are unable to wire as described above due to wire size or another aspects of your application, put all wires through four reactor cores in series without winding, as shown in Figure 2.

RF220X00A

RF Filter number RF220X00A can be used with all models of GS2 AC drives.



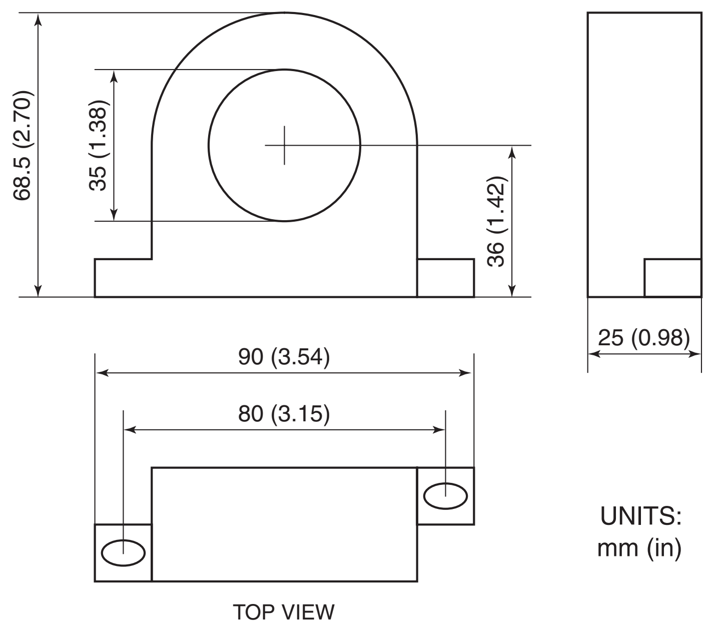


Figure 1

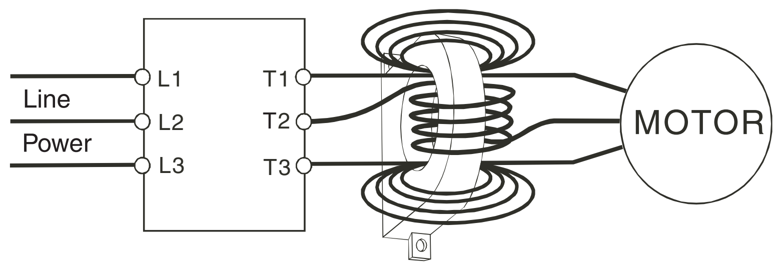
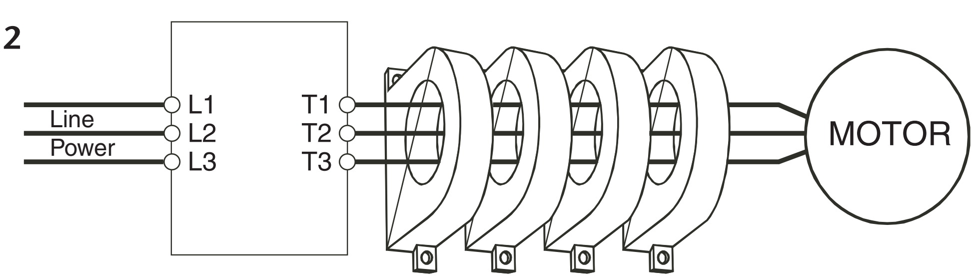


Figure 2



Fuses and Fuse Kits

Short-circuit and ground fault protection devices are essential to prevent costly damage to your AC Drive application equipment. Fuse kits are available from AutomationDirect for the 115V through 460V GS2 Series AC Drives.

Warning: The fuse kits provide protection only for the semiconductor components inside the AC drive. Motor branch circuit overcurrent protection should be separately provided using applicable local codes.

The following fuse kits consist of one fuse block and fuses sized to match each GS2 Series AC Drive. Replacement fuses are also available, and their part numbers are listed in the table below.

Fuse Kit Specifications (for 115V, 230V, 460V GS2 drive models)							
Part Number	**Drive Model / Phase**	**Fuse Block**	**Wire Size**	**Fuse Type**	**Dimen -sions**	**Fuse Rating**	**Replacement Fuses**
GS-10P2-FKIT-1P	GS2-10P2 / 1	2 pole	Al/Cu #2-14	A3T	Figure 1	300V@20A	**GS-10P2-FUSE-1P**
GS-10P5-FKIT-1P	GS2-10P5 / 1						**GS-10P5-FUSE-1P**
GS-11P0-FKIT-1P	GS2-11P0 / 1						**GS-11P0-FUSE-1P**
GS-20P5-FKIT-1P	GS2-20P5 / 1						**GS-20P5-FUSE-1P**
GS-20P5-FKIT-3P	GS2-20P5 / 3	3 pole			Figure 2	300V@10A	**GS-20P5-FUSE-3P**
GS-21P0-FKIT-1P	GS2-21P0 / 1	2 pole			Figure 1	300V@30A	**GS-21P0-FUSE-1P**
GS-21P0-FKIT-3P	GS2-21P0 / 3	3 pole			Figure 2	300V@20A	**GS-21P0-FUSE-3P**
GS-22P0-FKIT-1P	GS2-22P0 / 1	2 pole			Figure 1	300V@45A	**GS-22P0-FUSE-1P**
GS-22P0-FKIT-3P	GS2-22P0 / 3	3 pole			Figure 2	300V@25A	**GS-22P0-FUSE-3P**
GS-23P0-FKIT-1P	GS2-23P0 / 1	2 pole			Figure 1	300V@60A	**GS-23P0-FUSE-1P**
GS-23P0-FKIT-3P	GS2-23P0 / 3	3 pole			Figure 2	300V@40A	**GS-23P0-FUSE-3P**
GS-25P0-FKIT	GS2-25P0 / 3					300V@60A	**GS-25P0-FUSE**
GS-27P5-FKIT	GS2-27P5 / 3		Al/Cu 2/0-#6		Figure 3	300V @100A	**GS-27P5-FUSE**
GS-41P0-FKIT	GS2-41P0 / 3		Al/Cu #2-14	A6T	Figure 4	600V@10A	**GS-41P0-FUSE**
GS-42P0-FKIT	GS2-42P0 / 3					600V@15A	**GS-42P0-FUSE**
GS-43P0-FKIT	GS2-43P0 / 3					600V@20A	**GS-43P0-FUSE**
GS-45P0-FKIT	GS2-45P0 / 3					600V@30A	**GS-45P0-FUSE**
GS-47P5-FKIT	GS2-47P5 / 3				Figure 5	600V@50A	**GS-47P5-FUSE**
GS-4010-FKIT	GS2-4010 / 3		Al/Cu 2/0-#6		Figure 6	600V@70A	**GS-4010-FUSE**

Fuses and Fuse Kits (continued)

Edison Class CC fuses and fuse blocks are available for the 575V GS2 drives.

Fuses (for 575V GS2 drive models)							
Drive Model	**Fuse Rating**	**Fuse Type (Qty Req'd)**	**Edison Fuse**	**Edison Fuse Block**	**Dimensions**	**Poles**	**Wire Range**
GS2-51P0	6A @ 600V	CC (3)	**HCLR6**	**BC6033PQ or CHCC3D or CHCC3DI**	Figure 7	3	18-8 AWG (1-16 mm^2)
GS2-52P0	10A @ 600V		**HCLR10**				
GS2-53P0	15A @ 600V		**HCLR15**		Figure 8		
GS2-55P0							
GS2-57P5	20A @ 600V		**HCLR20**		Figure 8		
GS2-5010	30A @ 600V		**HCLR30**				

Fuses and Fuse Kits Dimensions

Figure 1
[units = inches]

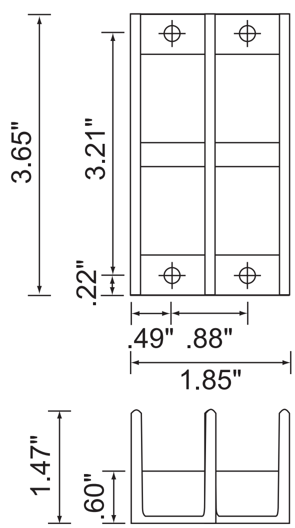


Figure 2
[units = inches]

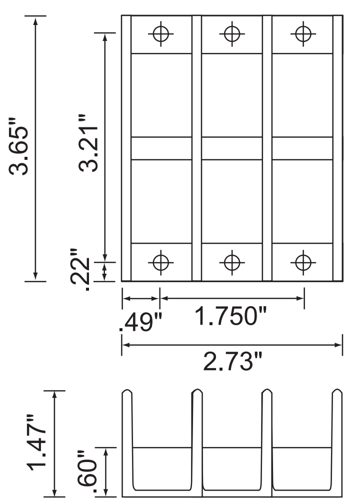
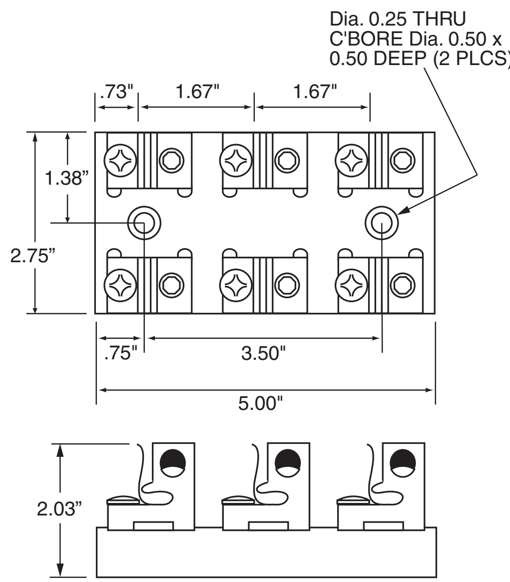


Figure 3
[units = inches]



Fuses and Fuse Kits Dimensions (continued)

Figure 4 [units = inches]

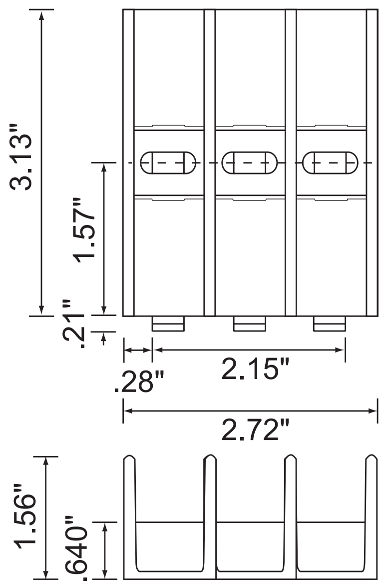


Figure 5 [units = inches]

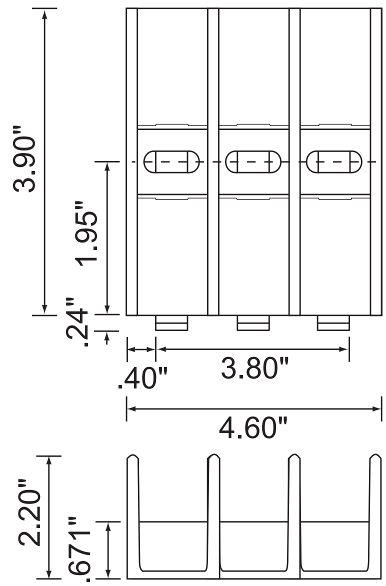


Figure 6 [units = inches]

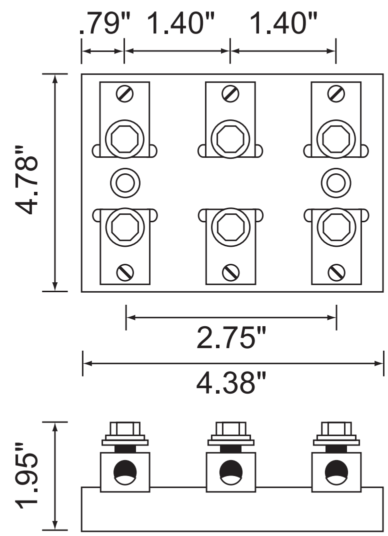


Figure 7 [units = inches (mm)]

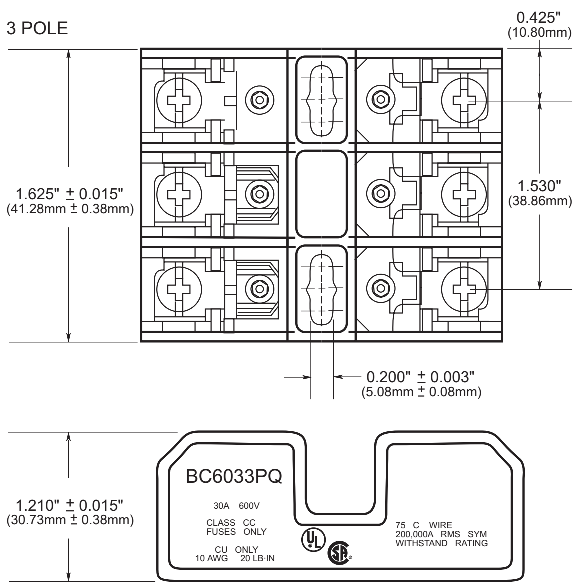
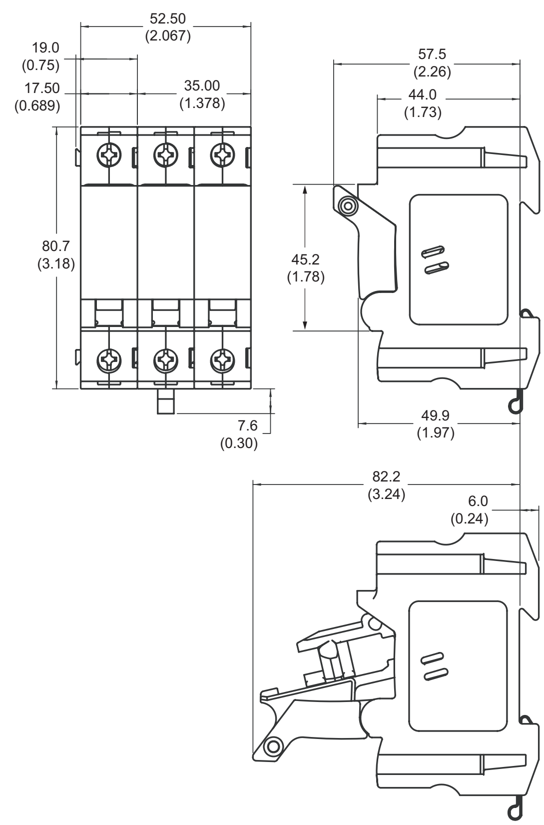


Figure 8 [units = mm (inches)]



GS-EDRV Ethernet Interface

The GS-EDRV Ethernet Interface provides a low-cost, high-performance Ethernet link between a PLC/PC-based Control system and any GS Series AC Drive. The GS-EDRV mounts on DIN rail and communicates through cable connections to the AC drive and Ethernet hub or PC.

Functions and features of the interface:

- process input signals from the AC drive
- formats signals to conform to the Ethernet standard for connectivity to many control system architectures: H2-ERM or H4-ERM, KEPDirect EBC I/O server, or independent controller with a Modbus TCP/IP driver
- transmit the signals to the PC-based controller
- receive and translate output signals from the PLC/PC-based Control software
- distribute the output signals to the appropriate drive
- built-in web browser allows users to configure and control the drive from any web browser via the IP address of the GS-EDRV card.

The control function is not performed by the interface. The control function is performed by PC–based Control software (which is purchased separately) running on a PC.

The GS-EDRV requires an external 24 VDC power supply.

The GS series drives have a provision for shutting down control or power to the drive in the event of a communications time-out. This function can be set up through the drive parameter group 9.

GS-EDRV

Ethernet interface number GS-EDRV can be used with all models of GS2 AC drives.

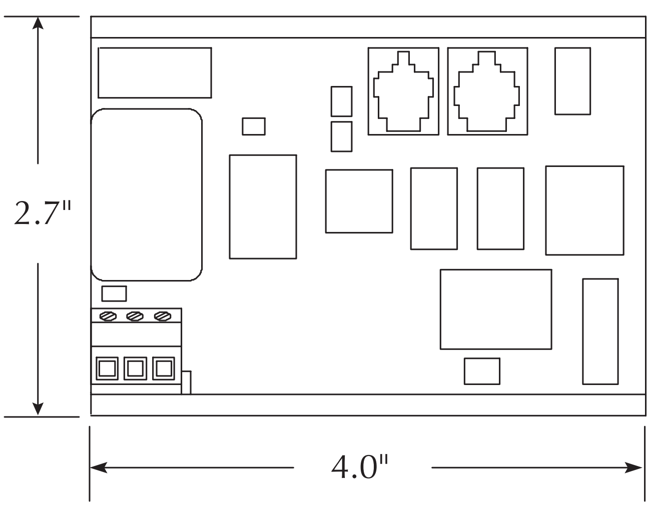
Specifications		
Part Number	**Input Voltage**	**Input Current**
GS-EDRV	10-33 VDC	90-135 mA
Can be used with all GS2 AC drives.		

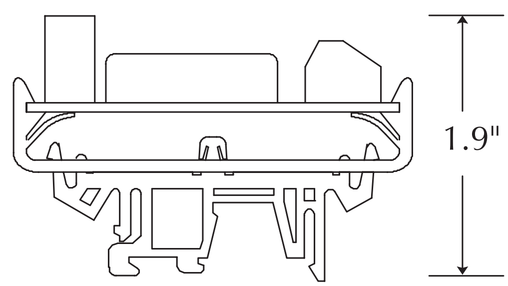
GS-EDRV Ethernet Interface (continued)

GS-EDRV



Dimensions





units: inches

GS Drive Configuration Software

GSoft is the optional configuration software for the GS family of AC drives. It allows you to connect a PC to a GS series AC drive via RS-232 or RS-485, and performs a variety of functions:

GS Series AC Drive Software	
Part Number	**Description**
GSOFT	GS drives configuration software

- Upload/download drive configurations
- Create new drive configurations using Quick Start, Detailed, or Schematic Views
- Edit drive configurations
- Archive/store multiple drive configurations on your PC
- Trend drive operation parameters
- Tune the drive PID loop
- View drive faults
- Print a schematic representation of the drive configuration

System Requirements

GSoft will run on PCs that meet the following requirements:

- Windows 95, 98, Me, NT, 2000, and XP
- Internet Explorer 4.0 or higher (for HTML help support)
- 24Mb of available memory
- 8 Mb hard drive space
- Available RS-232 serial port

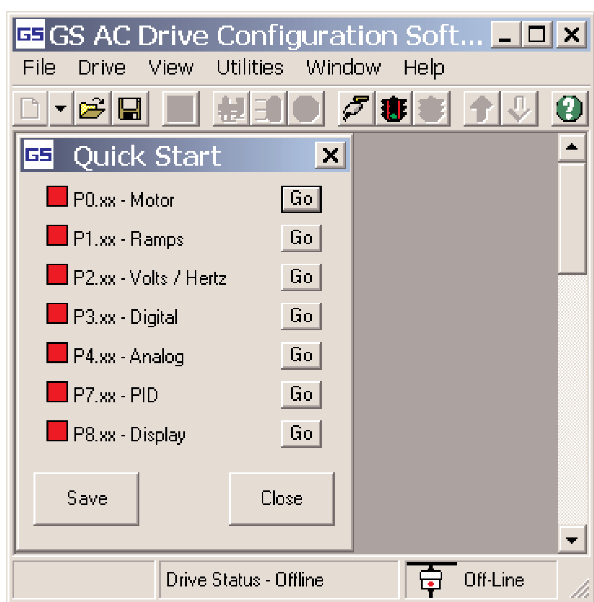
Note: GSoft requires use of a configuration cable, GS-232CBL, which is sold separately.
Note: RS-485 communication from an RS-232 PC port requires an FA-ISOCON or compatible converter, which is sold separately.

Software Configuration Methods

GSoft offers 3 methods of creating a new configuration for your AC drive.

Quick Start Configuration

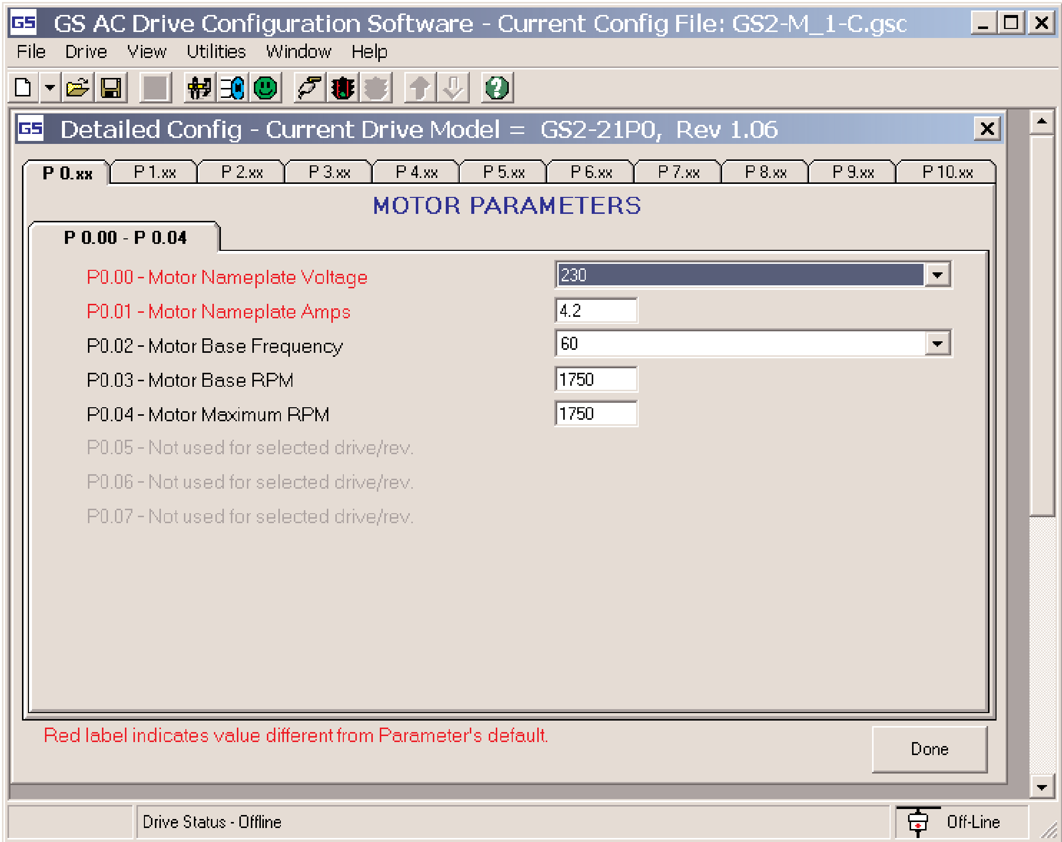
The Quick Start Configuration method guides you through the most commonly used AC drive parameters. Quick Start Configuration may ONLY be used to create a new configuration. Once created and saved, a configuration built with the Quick Start Configuration method may be edited using the Detailed or Schematic View methods.



Software Configuration Methods (continued)

Detailed Configuration

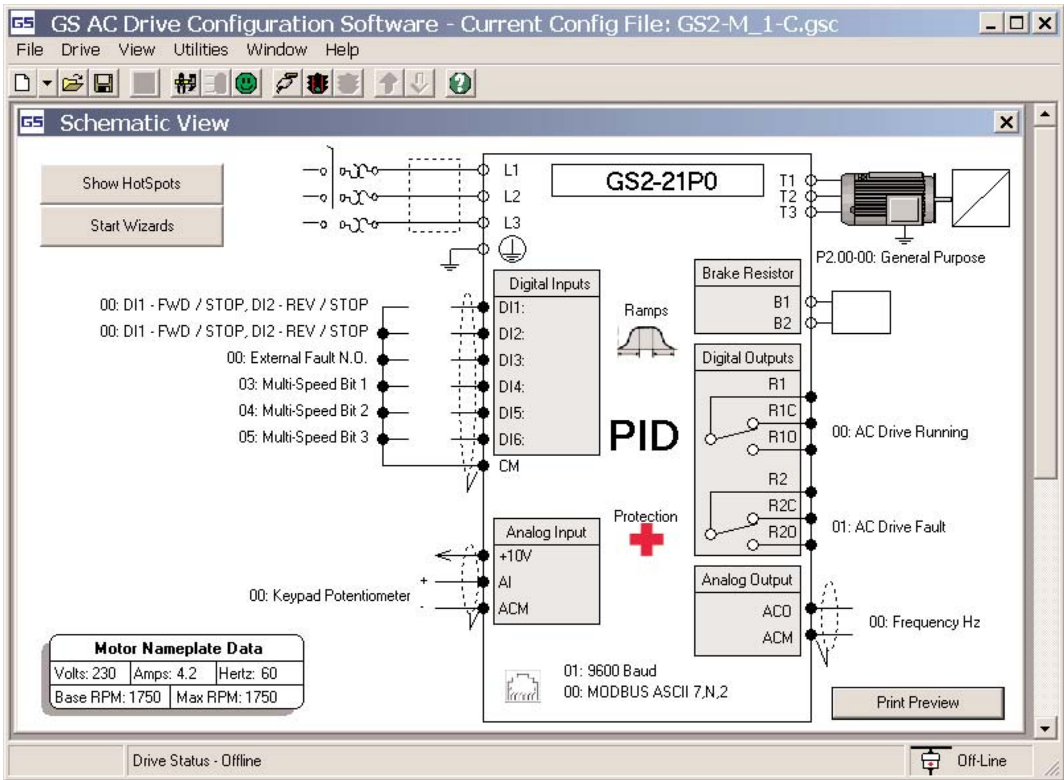
The Detailed Configuration method provides AC drive parameter access in a tabbed dialog format. Detailed Configuration can be used for new or existing configurations.



Software Configuration Methods (continued)

Schematic View Configuration

The Schematic View Configuration method uses a schematic picture of the AC drive and external connections to guide you through the setup of the AC drive. The Schematic View method can be used for new or existing configurations.



Miscellaneous Accessories

Configuration Cable

GS-232CBL

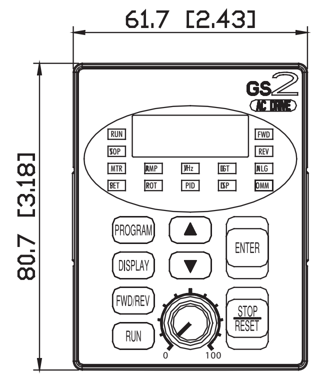
Required programming cable for GSOFT software.

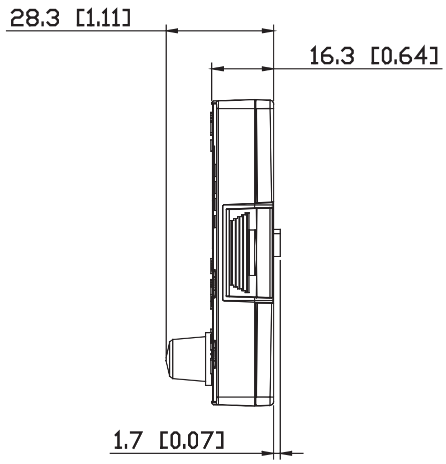
Spare Keypad

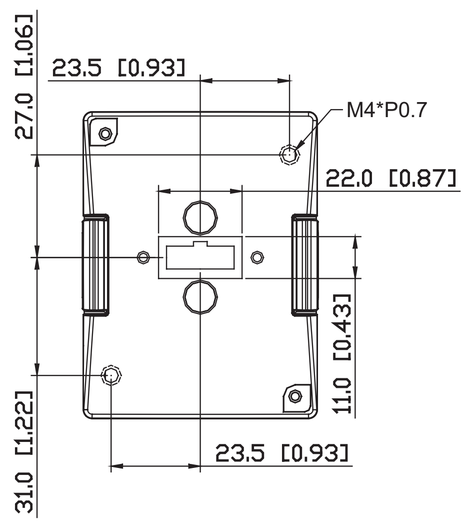
GS2-KPD

Spare or replacement keypad for GS2 AC drives.









Keypad Cables

(installation screws included)

GS-CBL2-1L

1 meter keypad cable

GS-CBL2-3L

3 meter keypad cable

GS-CBL2-5L

5 meter keypad cable

GS-CBL2-1L



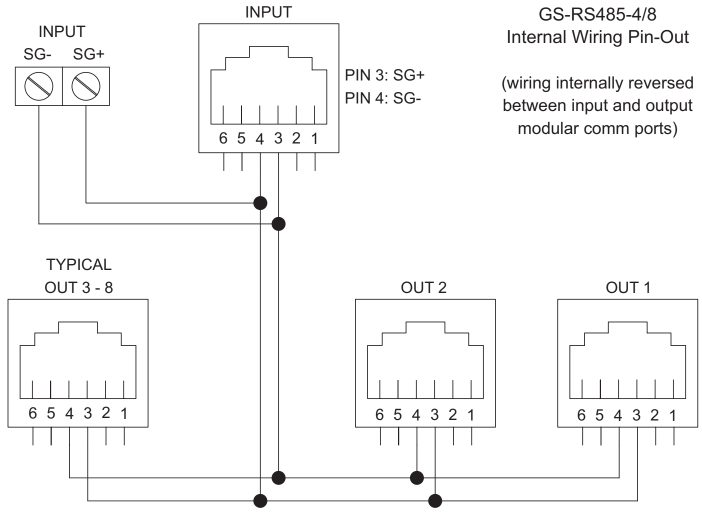
GS-CBL2-3L



GS-CBL2-5L

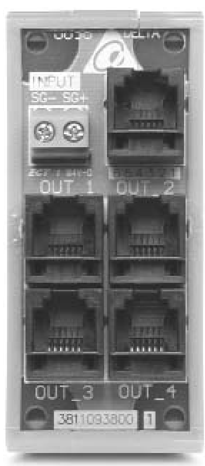


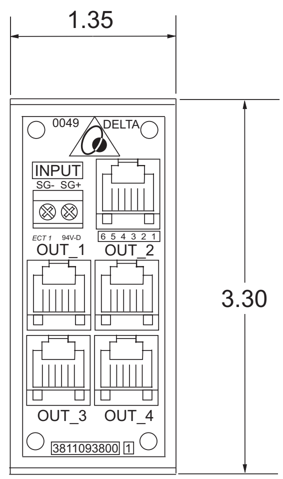
Communication Distribution Blocks

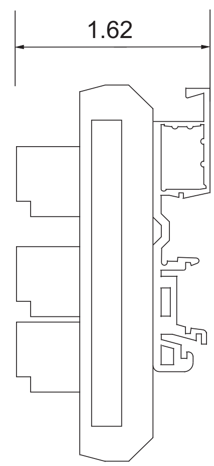


GS-RS485-4

4 port RS485 Communication Distribution Board







GS-RS485-8

8 port RS485 Communication Distribution Board



